<u>REMARKS</u>

Claims 1-34 are currently pending in the subject application and are presently under consideration.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I.   <u>Rejection of Claims 1-34 Under 35 U.S.C. §103(a)</u>

Claims 1-34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bak, *et al.* (U.S. 5,999,732) in view of Yantchev, *et al.*, "Adaptive, low latency, deadlock-free packet routing for networks of processors", IEEE Proceedings, 136, 178-186 (May 1989). This rejection should be withdrawn for at least the following reasons. Neither Bak, *et al.* nor Yantchev, *et al.*, alone or in combination, teach or suggest each and every limitation of applicants' claimed invention.

> To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) *must teach or suggest all the claim limitations. See* MPEP §706.02(j). The *teaching or suggestion to make the claimed combination* and the reasonable expectation of success *must be found in the prior art and not based on the Applicant's disclosure. See In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

The subject invention relates to detection, prevention and resolution of deadlocks associated with execution class initialization code. In particular, independent claims 1 and 15 recite *an initialization method activator that calls a class initialization method at a pre-determined execution point and a deadlock analyzer that determines whether running the class initialization method will produce a deadlock.* The claimed deadlock analyzer performs an analysis to determine if the class initialization method will produce a deadlock when run. As conceded in the Office Action, Bak, *et al.* fails to teach or suggest such a deadlock analyzer. Contrary to assertions in the Office Action, Yantchev, *et al.* also does not teach or suggest a

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deadlock analyzer that determines whether running the class initialization method will produce a deadlock. Rather, Yantchev, *et al.* teaches deadlock prevention associated with packet routing communication networks, and does not pertain to execution of class initialization code in any manner. The Office Action suggests that routing packets is equivalent to class initialization code. However, executing class initialization methods is not analogous to routing packets on a communication network. Moreover, Yantchev, *et al.* does not mention or suggest class initialization code anywhere. Bak, *et al.* relates to techniques for reducing the cost of dynamic class loading and initialization checks in compiled code, and in particular techniques for reducing the cost of dynamic class loading, and Yantchev, *et al.* pertains to the provision of deadlock prevention in a packet routing network. Therefore, Bak, *et al.* and Yantchev, *et al.* relate to different subject matter and provide no motivation to be combined with one another in the manner suggested absent impermissible use of applicants' claimed invention as a 20/20 hindsight based roadmap. Thus, it is submitted that the combination of Bak, *et al.* and Yantchev, *et al.* fails not only to teach or suggest an initialization method activator that calls a class initialization method at a pre-determined execution point and a deadlock analyzer that determines whether running the class initialization method will produce a deadlock, but also that the combination of Bak, *et al.* and Yantchev, *et al.* is impermissible.

Independent claim 16 recites *a semantic analyzing component that determines a semantic type associated with the initialization method* and *a deadlock analyzing component* that *determines whether calling the initialization method will create a deadlock and resolves the deadlock.* Contrary to assertions in the Office Action, Bak, *et al.* fails to provide the semantic analyzing component. Rather, Bak, *et al.* provides a routine that analyzes a class field wherein the routine *resolves the location of a field in memory and the class to which it belongs.* In contrast, the claimed invention utilizes a semantic analyzer to determine a semantic type associated with the initialization method that in turn *determines when the initialization method should run.* Furthermore as discussed *supra* with respect to independent claim 1, Yantchev, *et al.* fails to teach or suggest the deadlock analyzing component recited in applicants' claimed invention. In particular, Yantchev, *et al.* fails to provide a deadlock analyzing component that can determine not only whether the invocation of an initialization method will create a deadlock, but that can also resolve the deadlock. Moreover, as discussed above, Yantchev, *et al.* makes no mention of class initialization, much less determining and resolving deadlocks thereof. Thus, the

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combination of Bak, *et al.* and Yantchev, *et al.* fails to teach or suggest a semantic analyzing component that determines a semantic type associated with the initialization method and a deadlock analyzing component that determines whether calling the initialization method will create a deadlock and resolves the deadlock.

Independent claims 17 and 27 recite *determining whether calling the initializing method will generate a deadlock and if calling the initializing method will generate a deadlock, resolving the deadlock.* As conceded in the Office Action, Bak, *et al.* fails to provide the recited limitation. The Office Action relies upon Yantchev, *et al.* to cure the deficiencies of Bak, *et al.* However, as stated *supra,* Yantchev, *et al.* is directed to analysis of deadlocks when routing packets on a computer network rather than determining whether calling the initializing method will generate a deadlock, and if so resolving the determined deadlock. Accordingly, the combination of Bak, *et al.* and Yantchev, *et al.* does not teach or suggest the entirety of independent claims 17 and 27.

Independent claims 28 and 31 recite *analyzing semantic information associated with the initializing method, where the semantic information comprises an identifier that identifies whether the initializing method desires "exact" or "before field initialization" behavior; and determining whether calling the initializing method will generate a deadlock; resolving the deadlock.* As discussed above with respect to independent claim 16, Bak, *et al.* fails to teach or suggest analyzing semantic information associated with an initialization method. Moreover, Bak, *et al.* also does not teach that the semantic information specifies "exact" or "before field initialization" behavior for initializing the method. Furthermore as noted *supra* with respect to independent claim 1, Yantchev, *et al.* fails to teach determining whether calling the initializing method will generate a deadlock, as well as resolving the deadlock. Therefore, the combination of Bak, *et al.* and Yantchev, *et al.* fails to teach or suggest analyzing semantic information associated with the initializing method, where the semantic information comprises an identifier that identifies whether the initializing method desires "exact" or "before field initialization" behavior; and determining whether calling the initializing method will generate a deadlock; resolving the deadlock.

Independent claim 32 recites *means for identifying a constructor associated with a class* and ... *means for detecting deadlocks between constructors.* As the Office Action acknowledges, Bak, *et al.* does not teach a means for detecting deadlocks between constructors,

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and thus the Examiner offers Yantchev, *et al.* to rectify this deficiency. However, as stated *supra*, Yantchev, *et al.* fails to disclose identification of deadlocks between constructors associated with a class, but rather, teaches deadlock prevention associated with packet routing communication networks. Therefore, the combination of Bak, *et al.* and Yantchev, *et al.* does not teach or suggest the entirety of independent claim 32.

Independent claim 33 recites *a data packet adapted to be transmitted between two or more components, the data packet comprising information associated with one or more nodes associated with a wait for graph, where the nodes model one or more threads to be analyzed to determine whether class initialization code will generate a deadlock.* Although both Bak, *et al* and Yantchev, *et al* teach data packets, neither discloses a data packet containing information associated with a wait for graph. Bak, *et al.* merely teaches a data signal as part of a computer system using the internet for data storage. Further, Yantchev, *et al.* discloses a data packet in terms of network routing and separately provides a wait for graph to identify packet communication deadlocks. Yantchev, *et al.* however fails to disclose that the data packets containing information are associated with the wait for graph. Thus, it is submitted the combination of Bak, *et al.* and Yantchev, *et al.* fails to teach or suggest the limitations recited in independent claim 33.

Independent claim 34 recites *a data packet adapted to be transmitted between two or more components, the data packet comprising: a first field that holds information concerning the identity of a thread that is attempting to initialize a class; a second field that holds information concerning the identity of one or more threads that are waiting for a class to be initialized; and a third field that holds information concerning the initialization status of a class to facilitate deadlock detection and resolution.* Bak *et al.* and Yantchev *et al.* fail to describe the contents of any fields of a data packet. More specifically, neither Bak, *et al.* nor Yantchev, *et al.* disclose the contents of the three fields as recited in the subject claim. Therefore, the combination of Bak, *et al.* and Yantchev, *et al.* fails to teach or suggest a data packet adapted to be transmitted between two or more components, the data packet comprising: a first field that holds information concerning the identity of a thread that is attempting to initialize a class; a second field that holds information concerning the identity of one or more threads that are waiting for a class to be initialized; and a third field that holds information concerning the initialization status of a class to facilitate deadlock detection and resolution.

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In view of at least the above, it is respectfully submitted that Bak, *et al.* and Yantchev, *et al.*, alone or in combination, do not make obvious the subject invention as recited in independent claims 1, 15, 16, 17, 27, 28, 31, 32, 33, and 34 (and claims 2-14, 18-26, 29, and 30 which respectively depend there from). Accordingly, withdrawal of this rejection is respectfully requested.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP245US].

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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